UTAH DEPARTMENT OF HEALTH

Healthy Animals, Healthy People: How to Prevent the Spread of Zoonotic Diseases at Farms & Fairs

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MISSION & VISION

The Utah Department of Health's mission is to protect the public's health through preventing avoidable illness, injury, disability, and premature death; assuring access to affordable, quality health care; and promoting healthy lifestyles.

Our vision is for Utah to be a place where *all* people can enjoy the best health possible, where *all* can live and thrive in healthy and safe communities.

STRATEGIC PRIORITIES

Healthiest People – The people of Utah will be among the healthiest in the country.

Optimize Medicaid – Utah Medicaid will be a respected innovator in employing health care delivery and payment reforms that improve the health of Medicaid members and keep expenditure growth at a sustainable level.

A Great Organization – The UDOH will be recognized as a leader in government and public health for its excellent performance. The organization will continue to grow its ability to attract, retain, and value the best professionals and public servants.

ACKNOWLEDGEMENTS

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- Original slide decks can be found at http://www.nasphv.org/documentsCompendiumAnimals.html

Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services

maine DEPARTMENT OF Agriculture Conservation & Forestry

USDA

AGENDA

1. Overview
2. Zoonotic Diseases
3. Enteric Diseases
4. Handwashing
5. Biosecurity

GOALS & PURPOSES

- Reduce disease in animals and humans
- Increase disease prevention awareness

<u>We want YOU to be the teacher!</u>

ONE HEALTH TRIAD

- Animal health, human health, and environmental health are all connected
- All aspects must be healthy to truly lower risk of disease

GLOSSARY

- **Enteric disease** – stomach illnesses caused by germs that enter the body through the mouth
- **Feces/fecal** – bodily waste or poop
- **Fomite** – a nonliving object that can carry and spread germs
- **Host** – a living animal or plant that provides food or shelter for another
- **Immunity** – the natural ability of a human or animal to prevent or avoid illness
- **Immunocompromised/Immunosuppressed** – a person or animal with a weak immune system, making them more likely to get sick
- **Incubation period** – the time between when a human or animal is exposed to a germ and when they get sick
- **Lethargy** – a lack of energy
- **Mutation** – a change to the DNA or RNA
- **Organism** – a living plant, animal, or cell
- **Parasite** – a germ that lives on or in a host and can cause harm
- **Pathogen** – germs that can cause illness
- **Zoonotic diseases** – illnesses that can be spread between humans and animals

WHAT DISEASES ARE THE HIGHEST RISK AT A FAIR?

- Influenza
- COVID-19
- West Nile
- Rabies
- Q Fever
- Cryptosporidiosis
- Campylobacteriosis
- Salmonellosis
- E. coli infection

WHAT IS A ZOONOTIC DISEASE?

- Zoonotic diseases are diseases which can be spread between animals and humans
  - ¾ of all human infectious diseases originated from animals
  - ½ of all diseases are zoonotic
- Younger kids, older adults, immunocompromised individuals are most at risk
- ***Prevention is key***

http://dhhr.wv.gov/oeps/disease/Zoonosis/Pages/default.aspx

INFLUENZA

What is it?

- Commonly known as the flu
- Can infect humans and animals
- Contagious as early as one day before symptoms develop
- Spread by bodily fluids

Signs and Symptoms:

Signs and symptoms in all species include runny nose, fever, cough, overall lethargy. Diarrhea and vomiting can also occur, but is rare.

- Animals:
  - Trouble breathing, runny eyes
- Humans:
  - Sore throat, headaches, muscle or body aches

INFLUENZA

Why is it high risk?

- Influenza can be deadly, in humans and animals
- The influenza virus changes often (mutates) making it difficult to control with vaccination or immunity after infection
- Diseases once limited to one species can mutate to infect others

How common is it?

- While it is unusual for people to get influenza infections directly from animals, sporadic human infections and outbreaks caused by certain avian influenza A viruses have been reported.

INFLUENZA: PREVENTION

Animals

- Keep area clean
- Biosecurity & Quarantine
  - Especially in events where new people/animals are introduced (i.e. fairs)
- Vaccinate if available
- Keep away from other sick animals or sick people
- Consult a veterinarian

Humans

- Wash hands frequently
- Vaccinate
  - Annual seasonal vaccine for humans
- Watch for signs of illness in animals and yourself
  - If you are sick, minimize contact with animals
  - If your animal is sick, minimize contact with other animals and humans

...and safe interaction between humans and animals

COVID-19

What is it?

- COVID-19 is a disease caused by a virus called SARS-CoV-2.
- Older people and those who have certain underlying medical conditions are more likely to get severely ill from COVID-19.
- Vaccines against COVID-19 are safe and effective.

Signs and symptoms

- Most people with COVID-19 have mild symptoms, but some people can become severely ill.
- Although most people with COVID-19 get better within weeks of illness, some people experience post-COVID conditions.
- Post-COVID conditions are a wide range of new, returning, or ongoing health problems people can experience more than four weeks after first being infected with the virus that causes COVID-19.

COVID-19

Why is it high risk?

- For humans, we know that COVID-19 can lead to severe illness, hospitalization, and sometimes death
- We know that companion animals like cats and dogs, big cats in zoos or sanctuaries, gorillas in zoos, mink on farms, and a few other mammals can be infected with SARS-CoV-2, but we don't yet know all of the animals that can get infected.
- Most of these animals became infected after contact with people with COVID-19.
- As with influenza, there is a risk of SARS-CoV-2 transmission between humans and animals which poses opportunity for virus mutation

How common is it?

- In the US:
  - 34.4 million human cases
  - 217 animals in the US
- In Utah:
  - 428,687 total human cases, averaging 814 per day
  - 12 mink farms, 6 cats/dogs in UT

COVID-19: PREVENTION

Human to human spread:

- Vaccinate
- Wear a mask
- Wash your hands
- Stay 6 feet away from those not in your household
- Clean and disinfect high touch surfaces

Spread between humans and animals:

- People with suspected or confirmed COVID-19 should avoid contact with animals, including pets, livestock, and wildlife.
- If your pet gets sick after contact with a person with COVID-19, call your veterinarian and let them know the pet was around a person with COVID-19.
- Separate a sick animal from other humans and animals

WEST NILE VIRUS

What is it?

- West Nile virus is carried by mosquitoes. It can cause disease (West Nile infection) in humans, birds, horses, and some other mammals.
- Most cases of West Nile virus in the United States occur June through September.
- West Nile virus is mainly transmitted to people through the bites of infected mosquitoes.
- You can't get infected from casual contact with an infected person or animal.

Signs and symptoms

- Most people infected with West Nile virus either don't develop signs or symptoms or have only minor ones, such as fever and mild headache, body aches, joint pains, nausea, and vomiting.
- Mild signs and symptoms of a West Nile virus infection generally go away on their own.
- Severe signs and symptoms — such as a severe headache, fever, disorientation or sudden weakness — require immediate attention.

WEST NILE VIRUS

Why is it a high risk?

- Some people develop a life-threatening illness that includes inflammation of the spinal cord or brain.
- Symptoms of severe illness include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis.
- Some effects to the central nervous system might be permanent.
- The virus can cause severe disease and death in horses. Vaccines are available for use in horses, but not for people.

How common is it?

- Most people (70-80%) who become infected with West Nile virus do not develop any symptoms.
- About 1 in 150 people in the US who are infected develop a severe illness affecting the central nervous system such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord).
- About 1 in 5 people in the US who are infected will develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash. Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months.
- About 1 out of 10 people who develop severe illness affecting the central nervous system die.

WEST NILE VIRUS

Utah:

- In 2020, a total of 5141 mosquito pools were tested, with 44 testing positive for WNV.
- The first positive pool was identified on July 14, 2020.
- 17 pools tested presumptive positive for SLE in Southwest.
- Four horses were positive for WNV.
- Two human WNV cases were reported, one neuroinvasive, the other non-neuroinvasive.
- In 2020, there were zero deaths reported due to WNV infection, and zero presumptive viremic donors.

WEST NILE VIRUS: PREVENTION

To reduce opportunities for mosquitos:

- Remove all sources of stagnant water from around the home.
- Fix and use screens on doors and windows.
- Remove any puddles or standing water around your home where mosquitoes can breed, including birdbaths, swimming/wading pools, old tires, buckets and plant containers.
- Report bodies of stagnant water to the local Mosquito Abatement District (MAD). Visit http://www.umaa.org/ for a list of MADs.
- Contact a veterinarian for information on vaccinating horses.

To reduce the risk of mosquito bites:

- We recommend trying to avoid going outdoors during the peak mosquito activity hours at sunrise and sunset (dusk and dawn)
- When you are outdoors, especially during those peak times, we recommend wearing long sleeved shirts, pants and socks to protect from mosquito bites
- Third, if you are outdoors, especially during those peak times, we recommend the use of CDC/EPA approved mosquito repellent

RABIES

What is it?

- Rabies is a disease of the nervous system caused by a virus and can occur in humans and animals.
- In humans, rabies usually results from exposure to an animal with rabies.
- All mammals are susceptible to rabies.
- The most common host in Utah are bats, though we have had a few positive foxes and skunks
- Rabies in humans is fatal almost 100% of the time.
- The principal rabies reservoir hosts in the United States today include bats, raccoons, skunks, and foxes

Signs and symptoms

Animals

- Aggressive behavior
- Excessively salivate
- Paralysis
- Difficulty swallowing

Humans

- Progressive neurologic signs
- Hydrophobia
- Difficulty swallowing
- partial paralysis

RABIES

Why is it high risk?

- Rabies is nearly 100% fatal in humans
- Post exposure prophylaxis is required in humans as soon as possible after a potential rabies exposure
- In the event of an exposure to rabies, unvaccinated livestock should be euthanized immediately.
  - If the animal is not euthanized, it should be kept under close observation for 6 months.
  - Any illness in an animal under observation should be reported immediately to the local health department.
  - If the animal develops signs suggestive of rabies, it should be euthanized and tested.

How common is it?

- In Utah, we average about 15-25 positive animals each year (nearly all bats)
- We had one human fatal case in 2018

RABIES: PREVENTION

- Keep animals up to date on rabies vaccination
- Reduce opportunity for wild animals (bats, skunks, raccoons, etc) to be able to enter livestock areas
- Do not allow visitors to be able to be close enough to an animal that can bite them
- In petting zoo areas, observe and document any animal bites that occur
- Call your local health department if any animal bite occurred with a risk of rabies exposure to discuss potential need for PEP or animal quarantine

Q FEVER

What is it?

- Q Fever is a rare disease found and spread primarily by infected animals.
- Sheep, cattle, goats, cats, dogs, birds and ticks are common infected animals.
- Those who work with animals, including veterinarians, meat workers and farmers are at the highest risk to exposure.
- Q fever is spread to humans primarily though airborne dust.
- This dust becomes contaminated with bacteria from infected animals.
- Raw or unpasteurized milk from infected cattle can also cause infection.

Signs and symptoms

- Many people infected with Q fever never show symptoms.
- If symptoms do occur, they may show up between three and 30 days after exposure to the bacteria.
- Signs and symptoms may include:
  - High fever, up to 105ºF (41º C)
  - Severe headache
  - Fatigue
  - Chills
  - Cough
  - Nausea
  - Vomiting
  - Diarrhea
  - Sensitivity to light

Q FEVER

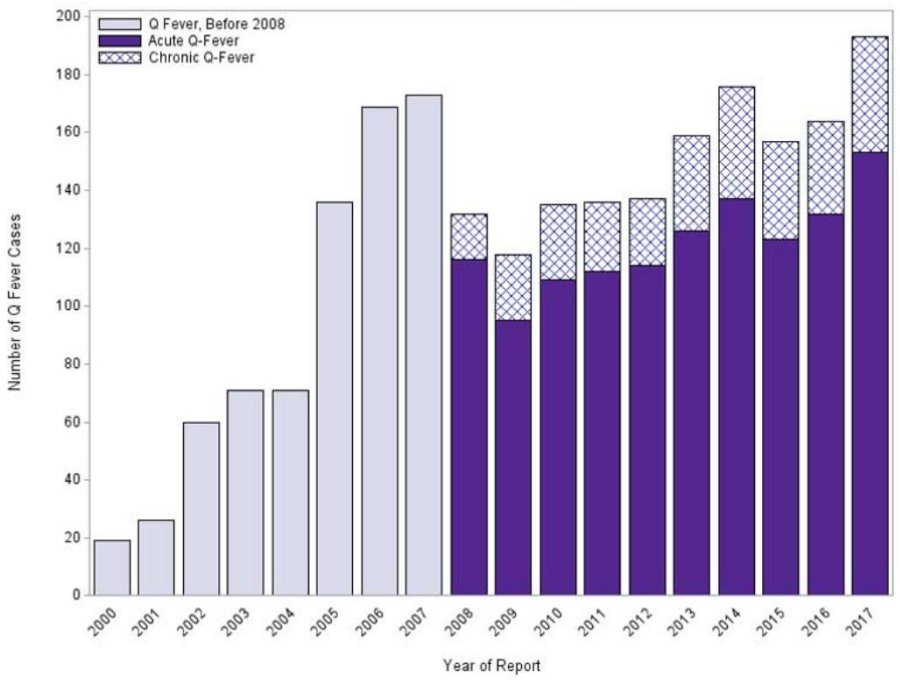
Why is it high risk?

- A recurrence of Q fever can affect your heart, liver, lungs and brain, causing serious complications, such as:
  - **Endocarditis.** An inflammation of the membrane inside your heart, endocarditis can severely damage your heart valves.
  - **Pneumonia.** Infection or inflammation of the lungs can lead to acute respiratory distress, a medical condition in which you are not getting enough oxygen.
  - **Liver damage.** Some people who have Q fever develop hepatitis, an inflammation of the liver that interferes with its function.
  - **Meningitis.** Q fever can cause meningitis, an inflammation of the membrane surrounding your brain and spinal cord.
  - Women infected during pregnancy may be at risk for **miscarriage, stillbirth, pre-term delivery, or low infant birth weight.**

How common is it?

- Since 2010, Utah has had 29 cases of Q fever (confirmed and probable) reported. 18 of these were acute, and 11 are chronic.

Number of Annual Q Fever Cases, 2000–2017.



Q FEVER: PREVENTION

- Assure appropriate disposal of placenta, birth products, fetal membranes, and aborted fetuses at facilities housing sheep and goats in accordance with facility-specific guidelines for infectious waste.
- Restrict access to barns and laboratories used in housing potentially infected animals.
- Use only pasteurized milk and milk products.
- Use appropriate procedures for bagging, autoclaving, and washing of laboratory clothing. Soiled laundry should not be shaken or handled in a way that might aerosolize infectious particles.
- Quarantine imported animals.
- Ensure that holding facilities for sheep are located away from populated areas.
- Animals should be routinely tested for antibodies to C. burnetii, and measures should be implemented to prevent airflow to other occupied areas.

Recommendations for Animal Care and Management

- Animals should be monitored daily by owners or caretakers for any signs of illness, and receive veterinary care if signs of illness occur.
- No ill animals or animals from hers with a recent history of abortion or diarrhea should be included in the exhibit.
- Animals should be housed to minimize stress and overcrowding, which can increase shedding of microorganisms.
- Preventive care, vaccinations, and parasite control should be provided by a licensed veterinarian appropriate to the animal species at the exhibit. Screenings for some diseases (e.g. tuberculosis in elephants and some ruminants or Q fever for ruminants in birthing exhibits) should be considered.
- Animals should be housed to reduce potential exposure from wild mammals, such as those that carry rabies (e.g. bats, foxes, and skunks). Mammals should also be current on rabies vaccinations.
- Some animals can be dangerous, unpredictable, or carry highly infectious diseases, and therefore are not appropriate to include in exhibit settings. These include non-human primates (e.g. monkeys and apes), and carnivores (e.g. lions, tigers, or bears).

Recommendations for Animal Care and Management

- Reptiles, baby chicks, and ducks are at high risk of shedding gastrointestinal bacteria, and should not be allowed for petting, especially by young children. Additionally, reservoirs of rabies such as bats, raccoons, skunks, foxes, and coyotes, should not be used for exhibits of this nature.
- If you are interested in including an exotic animal for your exhibit, please contact the Arizona Game & Fish Department and inquire about a permit.
- Generally, bringing an animal to a public exhibit that is very near to giving birth is not recommended. Animal births that may occur at your exhibit should be monitored to ensure the public has no contact with birthing products and the environment should be cleaned appropriately and thoroughly.
- Back-flow prevention devices should be installed between outlets in livestock areas and water lines supplying other uses on the grounds.
- Adequate distance from water supplied by a well must be maintained from possible sources of contamination such as animal holding areas or manure piles.
- Minimize the use of outdoor hoses, and do not leave hoses on the ground. Mark those accessible to the public as “not for human consumption”.

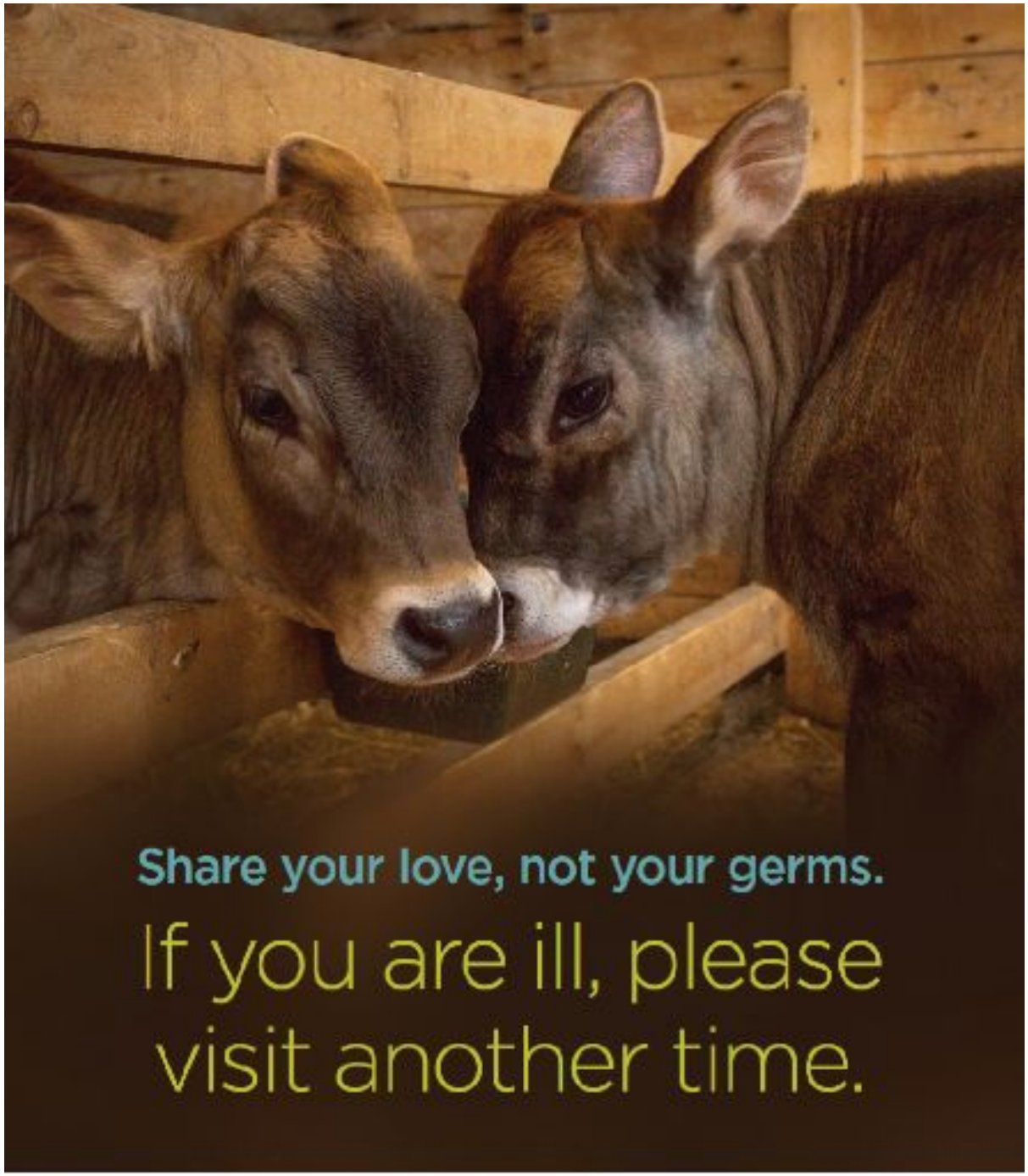
WHAT TO DO IF SICK

Animals

- If your animals show signs and symptoms of illness, please call your veterinarian
- Keep sick animals away from other animals and people

Humans

- If you're experiencing a fever greater than 100 degrees Fahrenheit, a cough, and a sore throat, please call your healthcare provider.
- Stay home until you feel better



www.maine.gov/dacf/ahw/animal_health

WHAT IS AN ENTERIC ILLNESS?

- Group of diseases that cause enteric (or intestinal) issues
  - Foodborne illnesses
- Spread through ingestion of contaminated food/water, contact with infected bodily fluids, direct and indirect contact with infected animals or people
- Often have severe and prolonged signs and symptoms
- Often have longer incubation periods

SIGNS AND SYMPTOMS OF ENTERIC ILLNESSES IN HUMANS

- Diarrhea (can be bloody)
- Nausea
- Stomach pain
- Vomiting
- Fever

http://www.askdrmanny.com/ulcerative-colitis/

THE ICEBERG PHENOMENON

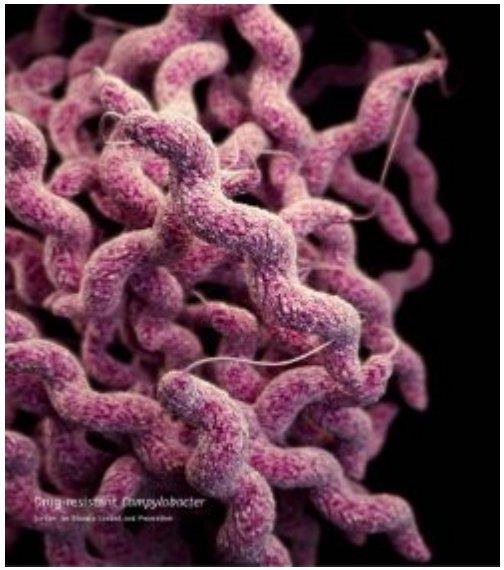
CAMPYLOBACTER

What is it?

- Bacteria also known as "Campy"
- Typically found in healthy cattle, pigs, poultry, livestock, and pets
- Incubation of 2-5 days
- Symptoms last about 1 week
- Lives in intestines of healthy animals and is spread by feces

Signs and Symptoms

- In humans: diarrhea (often bloody), fever, abdominal cramps, nausea, vomiting
- In animals: none



CAMPYLOBACTER

Why is it high risk?

- Animals can carry it without showing any signs and symptoms
  - Even healthy animals can shed this bacteria
- Bacteria can be spread weeks after signs and symptoms stop
- 1 in every 1,000 people infected with Campy will develop Guillain-Barré syndrome (GBS)

How common is it?

- Approximately 1.3 million human cases in the United States each year
- Approximately 500 human cases in Utah each year

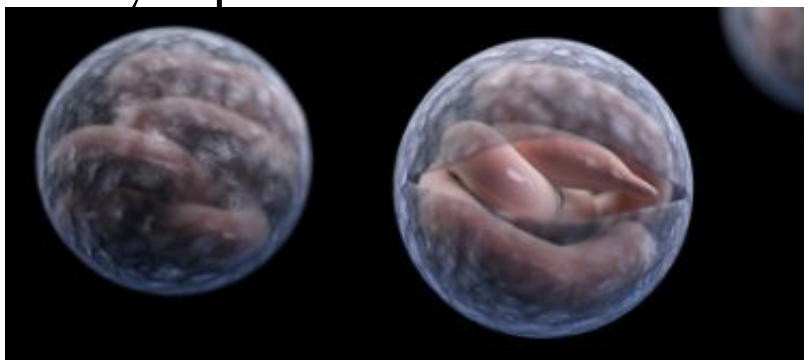
CRYPTOSPORIDIUM

What is it?

- Parasite also known as "Crypto"
- Commonly found in cattle
- Incubation of 2-10 days
- Symptoms last 1-2 weeks
- Lives in intestines of host and is shed through feces

Signs and Symptoms

- In humans: stomach pain, dehydration, nausea, vomiting, weight loss, fever
- In animals: typically diarrhea in young animals, adult animals are often asymptomatic



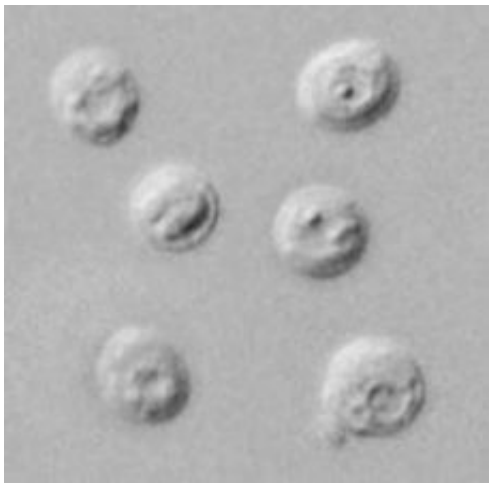
CRYPTOSPORIDIUM

Why is it high risk?

- Very common in cattle and other livestock
- Able to live outside of host for extended periods of time
- Able to survive in water
- Parasites still spread weeks after signs and symptoms stop
- Millions of parasites can be released from a single bowel movement

How common is it?

- Almost 750,000 human cases in the United States each year
- Approximately 200 human cases in Utah each year



E. COLI (STEC)

What is it?

- Bacteria
  - Some beneficial, some harmful
  - STEC (Shiga toxin-producing *E. coli*)
- Commonly found in cattle, goats, and sheep
- Incubation of 1-10 days
- Symptoms last about a week, unless HUS (hemolytic uremic syndrome) occurs, which can last another few weeks and is sometimes deadly
- Lives in intestines of infected animals and is spread through feces

Signs and Symptoms

- In humans (STEC): severe stomach cramps, diarrhea (often bloody), vomiting, low fever
- In humans (HUS): decreased urination, lethargy, loss of pink coloration in cheeks and inside lower eyelids
- In animals: none

E. COLI (STEC)

Why is it high risk?

- This bacteria lives naturally in animals, especially ruminants (cattle, sheep, goats, buffalo, deer)
- Animals often do not show symptoms but can spread it

How common is it?

- Approximately 100,000 cases in the United States each year
- Approximately 200 human cases of STEC in Utah each year
- Approximately 10 human cases of HUS in Utah each year

SALMONELLA

What is it?

- Bacteria
- Commonly found in chickens, reptiles, amphibians, livestock
- Incubation period of 12-72 hours
- Symptoms last about 4-7 days
- Lives in intestines of animals and is spread by feces. Raw meat, eggs, or milk from infected animals can also contain this bacteria

Signs and Symptoms

- In humans: diarrhea, fever, abdominal cramps
- In animals: none

SALMONELLA

Why is it high risk?

- Virtually any animal including common household pets such as dogs and cats can spread salmonella without showing signs and symptoms

How common is it?

- Approximately 1.2 million human cases each year in the United States
- Approximately 350 human cases in Utah each year

PREVENTION OF ENTERIC DISEASES

Humans

- Always wash hands after handling animals, their manure, bedding, etc.
- Always wash hands and surfaces after handling raw meat.
- Always wash produce before serving.
- Always wash hands before eating
  - Especially important after handling animals
- Keep food serving areas separate from animal enclosures.

Animals

- Regular deworming for parasites
- Keep environment clean
- Avoid sharing equipment/allowing contact with other herds

HOW TO WASH YOUR HANDS

- Wet your hands with clean, running water and apply soap.
- Lather your hands by rubbing them together with the soap.
- Scrub your hands for at least 20 seconds.
- Rinse your hands well under clean, running water.
- Dry your hands using a clean towel or air dry them.

WHY HAVEN'T I GOTTEN SICK?

- How many times have you had diarrhea and not known why?
- Signs and symptoms are often overlooked in healthy people (less likely to experience severe symptoms)
- Only way to know for sure is by a fecal test
- Biggest risk is with people who have underdeveloped/challenged immune systems

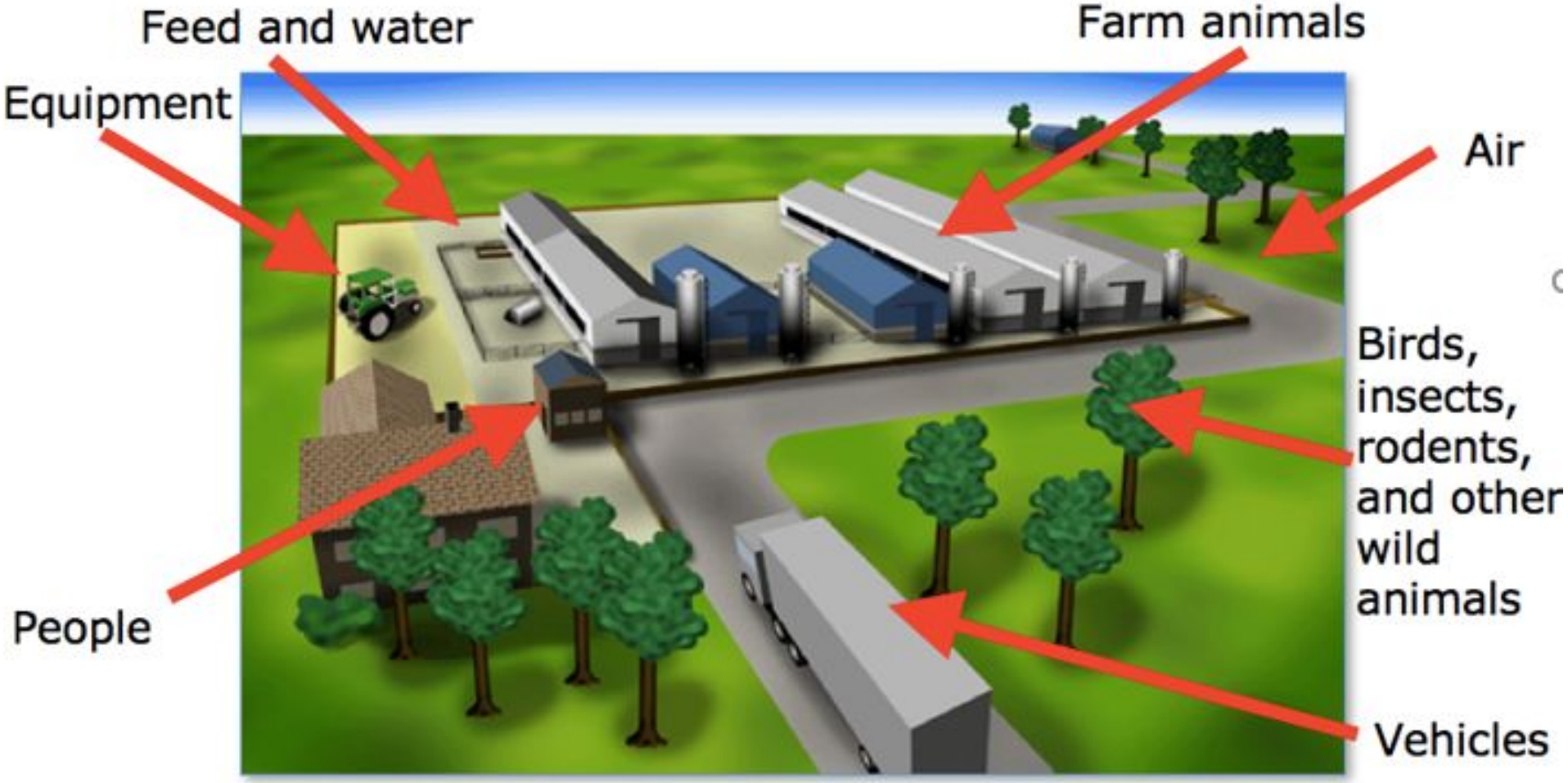
ZOONOTIC DISEASE & THE PUBLIC

- Farmers and people with animals willingly take this risk BUT the public is not always aware
  - Healthy people may show minimal signs and symptoms, however these diseases can be deadly for young children and anyone with a suppressed immune system
  - Our job is to make sure they are aware of these risks

BIOSECURITY: "WHAT" AND "WHY"

- Biosecurity is a set of protocols to help prevent the introduction and spread of disease
  - Keeping diseases from entering an area
  - Preventing disease from spreading to other locations
- Keeps your own herd safe from the introduction of new pathogens
- Helps minimize the spread of existing pathogens
- Helps prevent sickness from spreading TO or FROM humans and animals

WAYS PATHOGENS CAN ENTER A FARM



BIOSECURITY AT THE FAIR

- Fairs are educational and fun BUT can be high risk for both animals and people without proper biosecurity
  - People can get sick from your animals, or your animals can get sick from people
- Encourage healthy interactions between animals and people
  - Ask people to wash their hands before and after handling your animals (touching different animals back to back can spread disease from other farms to yours)
  - Discourage kissing animals, driving strollers through barns, using pacifiers that could be dropped, etc.
- Keep human eating areas away from manure storage and animal areas

Use signage for those you cannot speak to directly

BIOSECURITY AT THE FAIR (CONT.)

- Do not share equipment with other farms
  - Even healthy animals can pass pathogens
- Keep your area clean and organized
- Separate any animals who appear to possibly be sick
- Never bring any animals that you suspect are ill

QUARANTINE

What is it?

- Quarantine is the process of isolating an animal(s) to prevent the spread of disease between them and the main population

How do you do it?

- Animal must be completely separated
- No shared equipment
- Change clothes and boots, wash hands after handling
- 21 days is the recommended quarantine time to protect against the majority of diseases

When is it necessary?

- When an animal seems sick
- When you bring home a new animal
- When you bring back animals from the fair

http://www.biosecuritynovascotia.com/disease-emergency/

TAKEAWAY

Even healthy, clean animals can pass on diseases that can hurt people…
So that's why education about the risks and the effective ways to reduce those risks is the key to healthy fairs!



RESOURCES

- Animal Contact Compendium and Resources
  http://www.nasphv.org/documentsCompendiumAnimals.html
  - Fact Sheets for Event Organizers
  - Fact Sheets for Visitors
  - Courses & Websites
  - PowerPoint Presentations
  - Signs: Disease Prevention
  - Signs: Handwashing
- Compendium of Measures to Prevent Disease Associated with Animals in Public Settings
  https://avmajournals.avma.org/doi/pdf/10.2460/javma.251.11.1268
  - Guidance on facility layout, cleaning, and animal management

THANK YOU!

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